

Impacts of Visitor Spending on the Local Economy: Arches National Park, 2003



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Executive Summary

Arches National Park hosted 757,787 recreation visits in 2003. These visits represent 205,600 party trips to the area (Table E1). The two largest visitor segments in terms of trips to the region were overnight visitors staying in hotels, motels or B&B's in the area (59%) and visitors on day trips (19%).

On average, park visitors spent \$310 per party per trip in the local area with spending varying from \$445 per party per trip for the hotel segment to \$67 per party for day trips. Total spending from park visitors in 2003 was \$63.7 million. Eighty-five percent of all visitor spending is from visitors staying at hotels, followed by other overnight visitors (9%). Sectors receiving the greatest direct benefit from park visitors were hotels (\$22.4 million), restaurants (\$12.8 million), and amusements (\$7.7 million).

Table E1. Arches National Park visits and spending by segment, 2003

Lodging segment	Recreation visits (000's)	Party trips (000's)	Average spending (per party trip)	Total spending (000's)	Pct of spending
Day trip	120.1	39.8	\$66.8	\$2.7	4%
In-Park Camp	48.6	9.1	\$134.6	\$1.2	2%
Hotel/motel	453.7	121.8	\$445.4	\$54.3	85%
<u>Other Overnight</u>	<u>135.5</u>	<u>34.9</u>	<u>\$160.5</u>	<u>\$5.6</u>	<u>9%</u>
Total	757.8	205.6	\$310.1	\$63.7	100%

The economic impacts of this spending were estimated with the National Park Service's Money Generation Model version 2 (MGM2). The MGM2 model uses park visitation data, spending averages from the 2003 Arches National Park Visitor Survey and the MGM2 rural area multipliers to estimate spending, income and jobs attributable to the park. The \$63.7 million spent by park visitors generated \$54.1 million in direct personal income (wages and salaries) for local residents and supported about 1,500 jobs in tourism-related businesses. Including secondary effects the total impact of park visitor spending on the local economy was \$24.6 million in personal income and 1,756 jobs. These figures do not include the impacts of park employees, park operations or construction activity.

Table E2. Economic impacts of Arches National Park visitor spending, 2003

<u>Economic Sector</u>	<u>Sales (\$000's)</u>	<u>Jobs</u>	<u>Personal Income (\$000's)</u>	<u>Value Added (\$000's)</u>
Direct Effects				
Motel, hotel cabin or B&B	22,366	550	6,491	9,864
Campgrounds	1,470	36	427	648
Restaurants & bars	12,789	384	4,027	5,610
Amusements	6,379	181	2,193	3,589
Local transportation	3,953	127	2,082	2,450
Retail Trade	6,004	204	3,063	4,784
Wholesale Trade	849	10	341	581
<u>Local Production of goods</u>	<u>302</u>	<u>1</u>	<u>16</u>	<u>31</u>
Total Direct Effects	54,111	1,493	18,640	27,557
<u>Secondary Effects</u>	<u>17,812</u>	<u>263</u>	<u>6,008</u>	<u>11,051</u>
Total Effects	71,923	1,756	24,648	38,609
<u>Multiplier</u>	<u>1.33</u>	<u>1.18</u>	<u>1.32</u>	<u>1.40</u>

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Impacts of Visitor Spending on the Local Economy: Arches National Park, 2003

Introduction

The purpose of this study is to document the local economic impacts of visitors to Arches National Park (ARCH) in 2003. The local region encompasses a one-hour driving distance around Moab, Utah. Economic impacts are measured as the direct and secondary sales, income, jobs and value added in the region resulting from spending by park visitors. The economic estimates are produced using the Money Generation Model version 2 (MGM2) (Stynes and Propst, 2000).

Arches National Park

Established in 1929, Arches National Park preserves over two thousand natural sandstone arches and a variety of geological resources in central east Utah. The park is located near the border of Utah and Colorado, about 20 miles from interstate highway 70 (Figure 1). The park offers 52 individual campsites and 2 groups sites. The individual campsite fees are \$10 per night while group sites rent for \$3 per person, up to \$33 per group per night. The park entrance fee is \$10 for vehicles or \$7 for individuals. An annual local passport, good for entrance to Arches NP, Canyonlands NP, Hovenweep NM and Natural Bridges NM is \$25.

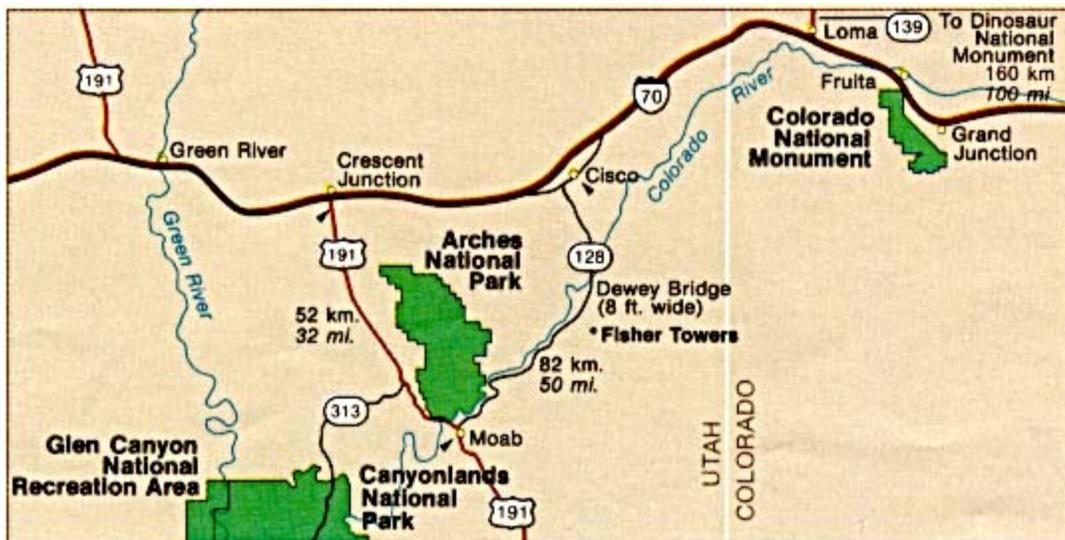


Figure 1. Arches National Park and the Region

Source: http://www.lib.utexas.edu/maps/national_parks.html

Total recreation visits to Arches National Park was 757,781 in 2003 (Table 1). Peak visitation for the park is from May to October, which accounts for 76% of the annual recreation visits. Total camping overnight stays at Arches NP was 44,631 in 2003.

Table 1. NPS Public Use Statistics for Arches NP, 2003

Month	Recreation visits	Percent	Camper	
			Overnight stays	Percent
January	13,326	2%	588	1%
February	13,760	2%	525	1%
March	50,242	7%	4,488	10%
April	70,795	9%	6,125	14%
May	106,873	14%	6,887	15%
June	101,997	13%	5,318	12%
July	95,296	13%	4,039	9%
August	99,352	13%	5,038	11%
September	99,639	13%	4,834	11%
October	72,875	10%	5,186	12%
November	21,343	3%	1,263	3%
<u>December</u>	<u>12,283</u>	<u>2%</u>	<u>340</u>	<u>1%</u>
Totals	757,781	100%	44,631	100%

Source: NPS Public Use Statistics (2004)

The Region

Arches National Park is located in Grand County, Utah. The population of Grand county was 8,710 in 2002 with an average income per capita of \$20,678. Total personal income was \$180 million, and total employments was 5,852 (Bureau of Economic Analysis, 2004). The unemployment rate was 7.4% in 2002, ranking 20th among all 29 Utah counties (Utah Department of Community & Economic Development, 2004). Government, retail trade, and accommodation and food services are the primary economic bases for the region (Table 2). The accommodation and restaurant sectors each paid out around \$10 million in wages and salaries (personal income) in 2002.

The Utah Department of Community & Economic Development (2004) reported total visitor spending in Grand County at 111.4 million supporting 2,042 jobs and \$2.3 million in taxes, ranking Grand County 8th among all counties in the state. Total gross taxable room sales in Grand County was 27.9 million in 2002.

Methods

Visitor spending and economic impacts are estimated with the Money Generation Model, version 2 (MGM2). The three primary inputs to the model are:

- 1) number of visits to the park, broken down into distinct visitor segments,
- 2) spending averages for each segment, and
- 3) economic ratios and multipliers for the local region

Table 2. Economic activity in Grand County, Utah by NAICS industry sector, 2002

Sectors	Earnings by place of work (\$ 000)	Pct of total earnings	Jobs	Pct of jobs
Farm	-229	0%	98	2%
Forestry, fishing, related activities	(D)		(D)	
Mining	(D)		(D)	
Utilities	(D)		(D)	
Construction	11,097	9%	404	7%
Manufacturing	1,565	1%	95	2%
Wholesale trade	(D)		(D)	
Retail trade	16,364	13%	847	14%
Transportation and warehousing	(D)		(D)	
Information	1,227	1%	83	1%
Finance and insurance	1,685	1%	87	1%
Real estate and rental and leasing	2,471	2%	304	5%
Professional and technical services	3,868	3%	201	3%
Management of companies and enterprises	(D)		(D)	
Administrative and waste services	(D)		(D)	
Educational services	1,372	1%	157	3%
Health care and social assistance	6,703	5%	298	5%
Arts, entertainment, and recreation	3,936	3%	282	5%
Accommodation and food services	19,986	16%	1,413	24%
Accommodation	9,652	8%		
Food services	10,334	8%		
Other services, except public administration	6,436	5%	240	4%
<u>Government and government enterprises</u>	<u>34,403</u>	<u>28%</u>	<u>857</u>	<u>15%</u>
Total	124,318	100%	5,852	100%

D: Not shown to avoid disclosure of confidential information

Source: Bureau of Economic Analysis, 2004

The MGM2 model provides a spreadsheet template for combining park use, spending and regional multipliers to compute changes in sales, personal income, jobs and value added in the region. Visitor characteristics and spending are estimated from the 2003 Arches National Park Visitor Survey (Meldrum, Littlejohn, and Hollenhorst, 2004). Recreation visits are taken from the NPS Public Use Statistics for 2003. The MGM2 rural area multipliers capture the structure of the local economy.

Arches National Park Visitor Survey, 2003

A park visitor survey was conducted at Arches NP from August 10-16, 2003. The Visitor Survey Project (VSP) study measured visitor demographics, trip characteristics, travel expenditures, and visitor ratings of facility importance and quality. A total of 600 questionnaires were distributed to visitor groups along the park road between the visitor center and the La Sal Mountains viewpoint. Visitors returned 471 questionnaires for a 78.5% response rate. Data

generated from the visitor survey were used to develop spending profiles, segment shares and trip characteristics for Arches NP visitors. Some results reported here may differ slightly from the VSP report due to handling of outliers, missing values, and some adjustments to represent year-round use.

Based on the visitor survey, 36% of visitors to Arches NP were international visitors. United States visitors were mainly from California (16%), Colorado (9%), Utah (8%) and Illinois (7%). Seventy-six percent of visitors reported that Arches NP was their primary reason for traveling to Moab, Utah, while 17% reported that visiting other attractions in the region was their primary reason. See Meldrum et al. (2004) for a more detailed description of survey methods and other descriptive results.

MGM2 Visitor Segments

Visitors are divided into distinct segments to help explain differences in spending across user groups. Overnight visitors are distinguished from day visitors based on whether they incurred lodging expenses or camped inside the park during their stay. Three overnight trip segments are established for Arches NP.

Day trips: Park visitors not staying overnight in the region

Camp-In: Visitors staying at campgrounds inside the park

Motel: Visitors staying in hotels, motels, cabins, or B&B's within the local region

Other Overnight: Visitors staying in campgrounds, with friends or relatives, or other types of lodging in the region.

Converting Recreation Visits to Trips and Days in the Region

The NPS Public Use Statistics provide estimates of the total number of recreation visits to the park in 2003. A recreation visit is the count of one person entering the park. To estimate spending, recreation visits are converted into the number of distinct trips to the region and then distributed to the four visitor segments¹. This avoids double counting spending of visitors who may enter the park multiple times on the same trip.

Recreation visits are converted to party trips² as follows:

Vehicle entries to the park = recreation visits / party size

Party trips = vehicle entries / number of park entries per trip

¹ The Arches NP visitor survey did not measure length of stay in the area. Spending estimates are therefore made on a party trip basis.

² The travel group is defined to include all individuals in the same vehicle or staying in the same room or campsite.

Results

The analysis of travel expenses and trip characteristics is based on 399 respondents³. The majority of park visitors fall into the hotel segment. The average visitor party size was 2.6 (Table 3). Re-entry rate was 2 times for campers staying inside the park and less than 1.5 times for other visitor groups.

Table 3. Arches NP visit conversion parameters by lodging segments

	Day visitor	Camp-In	Hotel	Other overnight r	All Visitors
Party size	2.88	2.46	2.58	2.71	2.64
Entry rate	1.04	2.18	1.44	1.44	1.40
Number of cases	69 ^a	17	248	65	399

Note. ^a Only one case was identified as a local resident (3-digit zip code of 815).

Visitation

Segment shares are estimated based on the distribution of 440 respondents. Using the conversion parameters in Table 3, 758 thousand recreation visits in 2003 were converted to 287 thousand vehicle entries or 206 thousand party-trips to the park (Table 4). Overnight visitors staying in hotels contributed 59% of total party trips, followed by day visitors (19%) and other overnight visitors (17%).

Table 4. Visit measures for Arches NP by segment, 2003 (000's)

	Day visitor	Camp-In	Hotel	Other overnight	Total
Recreation visits	120,060	48,569	453,655	135,496	757,781
Vehicle entries	41,628	19,708	175,998	50,035	287,369
Party trips	39,844	9,055	121,845	34,856	205,600
Pct of rec. visits	16%	6%	60%	18%	100%
Pct of vehicle entries	14%	7%	61%	17%	100%
Pct of party trips	19%	4%	59%	17%	100%

Average Spending

Spending averages were estimated from the Arches National Park Visitor Survey. Spending averages were computed on a party trip basis for each segment. The survey covered expenditures that occur within a one hour's driving distance of Moab, UT.

³ A total of 72 of the 471 respondents to the survey were omitted from the economic analysis due to missing data, inconsistent responses or other reasons. Omitted cases included 2 respondents who did not report spending, 10 cases involving large parties (more than 8 people), 2 cases reporting more than \$6,000 per trip in spending, 27 cases using multiple lodging types, and 31 cases that did not identify a lodging type.

Visitors on day trips spent \$67 per party in the local region, 15% of which took place inside the park (Table 5). Campers staying inside the park spent around \$135 per party per trip, spending \$20 on camping fees. Visitors staying at hotels, cabins or B&B's spent approximately \$445 per trip including \$184 in lodging expenses. Other overnight visitors spent \$160 per party per trip in the region. Less than 10% of the trip spending of park visitors occurs inside the park.

Table 5. Arches NP visitor spending by trip segment, 2003 (\$ per party trip)

	Day visitor	Camp-In	Hotel	Other overnight
Spending inside the park				
Camping fees	0.00	19.71	0.00	0.00
Guide fees	0.00	1.06	1.35	0.08
Other transportation	0.07	0.59	1.47	0.00
Admissions, recreation	5.74	2.82	3.10	5.23
All other purchases	3.86	4.18	4.96	6.95
<u>Donations</u>	<u>0.49</u>	<u>0.00</u>	<u>0.31</u>	<u>0.00</u>
Total	10.16	28.35	11.20	12.26
Spending outside the park				
Hotels, motels	0.00	0.00	183.56	0.00
Camping fees	0.00	0.00	0.00	37.05
Guide fees	0.87	0.00	10.65	2.62
Restaurants, bars	21.49	16.18	91.23	19.25
Groceries, take out	8.32	38.18	19.67	29.45
Gas and oil	12.51	26.71	27.52	25.34
Other transportation	0.80	0.59	29.89	2.46
Admissions, recreation	2.86	5.12	26.94	12.08
All other purchases	9.26	19.41	44.61	19.95
<u>Donations</u>	<u>0.51</u>	<u>0.06</u>	<u>0.17</u>	<u>0.03</u>
Total	56.61	106.24	434.24	148.22
Grand total	66.77	134.59	445.44	160.48
Pct of inside park spending	15%	21%	3%	8%
Standard error of mean	10.97	24.49	31.28	14.55
Pct error (std. error / mean)	16%	18%	7%	9%

Total Spending

Total visitor spending is calculated by multiplying the number of party trips to the area (Table 3) by the spending averages for each segment (Table 5). The calculations are carried out segment by segment, summing across the four segments to obtain the grand total. Visitors to Arches NP in 2003 spent \$64 million in the local area (Table 6). Visitors spent \$22 million in hotels, \$13 million at restaurants and \$8 million for souvenirs and others. Visitors staying in hotels, motels or B&B's contributed 85% of the total spending followed by other overnight visitors (9%) and day visitors (4%).

Table 6. Total spending of Arches NP visitors in 2003 (\$000's)

Category	Day visitor	Camp-In	Hotel	Other overnight	Total	Pct
Motel, hotel cabin or B&B	0	0	22,366	0	22,366	35%
Camping fees	0	178	0	1,291	1,470	2%
Restaurants & bars	856	146	11,115	671	12,789	20%
Groceries, take-out food/drinks	331	346	2,397	1,026	4,100	6%
Gas & oil	498	242	3,353	883	4,977	8%
Local transportation	35	11	3,821	86	3,953	6%
Admissions & fees	417	82	5,182	698	6,379	10%
<u>Souvenirs and other expenses</u>	<u>523</u>	<u>214</u>	<u>6,040</u>	<u>938</u>	<u>7,714</u>	<u>12%</u>
Total	2,660	1,219	54,274	5,594	63,747	100%
Pct by visitor segment	4%	2%	85%	9%	100%	

Economic Impacts of Visitor Spending

The \$63.7 million spent by Arches National Park visitors had a direct economic impact on the region of \$54.1 million in direct sales, \$18.6 million in personal income (wages and salaries), \$27.6 million in value added, and supported 1,493 jobs in the region⁴ (Table 8). Economic impacts are calculated using the default rural area multipliers from the MGM2 model. The hotel sector received the largest amount of direct sales (\$22.4 million), followed by restaurants (\$12.8 million) and amusements (\$6.4 million).

Direct effects are less than total spending, as only the retail and wholesale margins on visitor purchases of goods accrue to the local economy. The local region surrounding Arches NP captures 85% of visitor spending. Fifteen percent of visitor spending leaks out of the local economy to cover the costs of imported goods bought by visitors⁵.

The sales multiplier for the region is 1.33, meaning that an additional \$0.33 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects generate an additional 263 jobs, about \$6.0 million in personal income and \$11.1 million in value added. Including direct and secondary effects, the total impacts of Arches NP visitor spending in 2003 on the local economy is \$71.9 million in sales, \$24.6 million in personal income, \$38.6 million in value added, and 1,756 jobs.

⁴ Personal income covers wages and salaries, including payroll benefits. Value added is the sum of personal income accruing to area households, profits and rents of area businesses, and indirect business taxes. Jobs include full and part time jobs (See Appendix A for definitions of economic terms).

⁵ For example, if a visitor buys \$50 dollars worth of clothing at a local store, the store receives the retail margin (assume \$20 dollars), the wholesaler or shipper (if local) may receive \$5 dollars, and the remaining producer price of the clothing (\$25 dollars) leaks immediately outside the local economy, unless the clothing is manufactured in the local region.

Table 7. Economic impacts of Arches NP visitor spending, 2003

Economic Sector	Direct Sales (\$000's)	Jobs	Personal Income (\$000's)	Value Added (\$000's)
Direct Effects				
Motel, hotel cabin or B&B	22,366	550	6,491	9,864
Campgrounds	1,470	36	427	648
Restaurants & bars	12,789	384	4,027	5,610
Amusements	6,379	181	2,193	3,589
Local transportation	3,953	127	2,082	2,450
Retail Trade	6,004	204	3,063	4,784
Wholesale Trade	849	10	341	581
<u>Local Production of goods</u>	<u>302</u>	<u>1</u>	<u>16</u>	<u>31</u>
Total Direct Effects	54,111	1,493	18,640	27,557
<u>Secondary Effects</u>	<u>17,812</u>	<u>263</u>	<u>6,008</u>	<u>11,051</u>
Total Effects	71,923	1,756	24,648	38,609
Multiplier	1.33	1.18	1.32	1.40

The economic significance of Arches National Park to the region can be demonstrated by comparing the spending by park visitors with overall tourism activity in Grand County. In 2003, visitors to Arches National Park contributed 57% of all tourist spending in Grand County, 80% of hotel room sales and 73% of tourism related employment (Table 8).

Table 8. Comparison of Grand County tourist spending and Arches National Park visitor spending

	Grand County (2002 estimates)	Arches NP (2003 estimates)	Pct of park visitor spending
Total visitor spending (000's)	111,400	63,747	57%
Gross taxable room rents (000's)	27,872	22,366	80%
Tourism related employment	2,042	1,493	73%

For some visitors, Arches NP is not the sole purpose of the trip and all of their expenses may not be lost to the region in the absence of the park. Based on the VSP survey, visiting Arches NP was the primary trip purpose for 76% of park visitors, 17% made the trip to visit other area attractions, while 4% of the trips were for business and 3% to visit friends and relatives. Many park visitors come to the region to visit a cluster of attractions, including Canyonlands NP, La Sal National Forest, Hovenweep NM and Natural Bridges NM. Fifty-four percent of Arches NP visitors indicated that they had visited other public lands in the region on their trip.

Counting only expenditures when Arches NP was the primary trip purpose reduces the overall spending attributed to the park by 25% from \$63.7 million to \$49.4 million. Including a

portion of the expenses for visitors whose primary trip purpose was not to visit Arches NP, puts the spending attributed to the park at \$57 million.

Study Limitations and Errors

The accuracy of the MGM2 estimates rest on the three primary inputs: visits, spending averages, and multipliers. The MGM2 rural area multipliers provide a reasonable description of the local economy. Spending averages from the 2003 Arches NP Visitor Survey are subject to sampling errors, measurement errors and potential seasonal bias. The sampling error for the spending average is 6% overall and ranges from 7% to 18% for individual segments. Using a 95% confidence interval around the spending average, total visitor spending in 2003 is estimated at between \$56.1 and \$71.4 million.

The visitor survey was conducted during a single 7-day period in July, 2003. Results may be assumed to represent summer season visitors. Off-season visitors tend to have smaller party sizes and may spend less on accommodations due to lower off-season rates and lower percentages of campers.

Summary and Discussion

Visitors to Arches National Park spent \$63.7 million within a 50-mile radius of the park in 2003. The direct local economic impact of visitor spending was \$54.1 million in sales, \$18.6 million in personal income (wages and salaries), \$27.6 million in value added, and 1,493 jobs. With multiplier effects, visitor spending generated a total of \$71.9 million in direct sales, \$24.6 million in personal income, \$38.6 million in value added, and 1,756 jobs. Sectors receiving the greatest direct benefit from park visitors were hotels (\$22.4 million in direct sales), restaurants (\$12.8 million), and admission & fees (\$6.4 million).

The MGM2 model results can be used to evaluate alternative management, development and marketing decisions. The marginal economic impacts of particular visitor segments are useful for evaluating particular actions. Table 9 shows the changes in sales, jobs, income and value added associated with an increase or decrease of one thousand additional party-trips by each segment.

To evaluate the regional economic impacts of filling an additional 10 rooms in area motels, for example, first compute the change in party trips – 100 party trips using these 10 rooms yields 1,000 extra party trips. Applying the marginal impacts for the “motel visitor” segment in Table 9 generates an additional \$391,000 dollars in direct sales in the region, \$133,500 in personal income, \$196,000 in value added and 10.8 jobs in direct effects. The impact of this alternative could be compared to others such as a marketing campaign to increase day trips.

Table 9. Direct impacts of an additional 1,000 party trips by segment, Arches NP, 2003

Segment	Direct Sales (\$000's)	Jobs	Personal Income (\$000's)	Value Added (\$000's)
(Marginal Impacts per 1,000 trips)				
Day visitor	46.7	1.4	17.4	26.2
Camp-In	80.1	2.3	30.5	46.8
Hotel	391.1	10.8	133.5	196.4
Other overnight	111.3	3.1	40.3	61.8

The economic impacts presented in this report document the economic significance of 757,781 recreation visits to Arches NP in 2003. Impacts will vary from year to year with changes in prices, visitor volumes, the mix of visitors attracted, and other changes in the park and surrounding communities. The MGM2 model has built-in procedures to price adjust spending averages over time, so that updated spending and impact figures may be obtained fairly easily. In the absence of significant structural changes in the local economy, multipliers will be quite stable over time. Changes in the number and kinds of visitors can be entered into the model to update impact estimates over time.

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Appendix A: Definitions of Economic Terms

Term	Definition
Sales	Sales of firms within the region to park visitors.
Jobs	The number of jobs in the region supported by the visitor spending. Job estimates are not full time equivalents, but include part time positions.
Personal income	Wage and salary income, proprietor's income and employee payroll benefits.
Value added	Personal income plus rents and profits and indirect business taxes. As the name implies, it is the net value added by the region to the final goods and services being provided. For example, the value added by a hotel includes wages and salaries paid to employees, their payroll benefits, profits of the hotel, and sales and other indirect business taxes. The hotel's non-labor operating costs such as purchases of supplies and services from other firms are not included as value added by the hotel.
Direct effects	Direct effects are the changes in sales, income and jobs in those business or agencies that directly receive the visitor spending.
Secondary effects	These are the changes in the economic activity in the region that result from the re-circulation of the money spent by visitors. Secondary effects include indirect and induced effects.
Indirect effects	Changes in sales, income and jobs in industries that supply goods and services to the business that sell directly to the visitors. For example, linen suppliers benefit from visitor spending at lodging establishments.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of the visitor spending. For example, motel and linen supply employees live in the region and spend the income earned on housing, groceries, education, clothing and other goods and services.
Total effects	Sum of direct, indirect and induced effects. <ul style="list-style-type: none"> ▪ Direct effects accrue largely to tourism-related businesses in the area ▪ Indirect effects accrue to a broader set of businesses that serve these tourism firms. ▪ Induced effects are distributed widely across a variety of local businesses.